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REMARKS

Applicant appreciates the thorough examination as evidenced by the Office Action of November 10, 2005. In particular, Applicant appreciates the Examiner's indication that Claims 18-25 are allowed and that Claims 8-10, 14-17, 52-54, 58-60 and 62-68 would be allowable if rewritten in independent form. Applicant also appreciates the Examiner signing and returning the seven 1449s submitted by Applicant. As discussed below, Claims 1-8, 14-17, 46-52 and 58-60 are generic to both Species I and II. Claim 61 has been amended as set out above and, therefore, is in compliance with section 112. Claims 8 and 52 have been rewritten in independent form. Furthermore, Claim 1 has been amended to include the recitations of dependent Claims 2 and 5, and Claims 2 and 5 have been cancelled from the present application. Claims 3 and 4 have been amended to conform the dependencies thereof to the cancellation of Claim 2. Claim 46 has been amended to include the recitations of Claim 49, and Claim 49 has been cancelled from the present application. Applicant has also cancelled Claims 26-45 and 69-77 as being drawn to non-elected species of the present invention. However, Claims 26-45 and 69-77 have been cancelled without prejudice to the filing of a divisional application for these claims and/or other claims.

The Restriction Requirement

The Office Action states that "claims 1-8, 14-17, 46-52 and 58-60 are generic to Species I." See Office Action, page 2. However, Applicant notes that Claims 1-8, 14-17 and 58-60 are generic to both Species I and Species II. See Restriction Requirement, page 2 and Applicant's Amendment and Response to Restriction Requirement, page 18. Thus, upon allowance of any these generic claims, Applicant respectfully requests consideration and allowance of all of the claims associated with either species I and/or II that depend therefrom.

The Section 112 Rejection

Claims 61-68 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. See Office Action, page 2. Applicant has amended Claim 61 to recite "a" first conformal layer instead of "the" first conformal layer as set out above. Accordingly, Applicant respectfully submits that amended Claim 61 is in compliance with 35

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U.S.C. § 112 and, therefore, request withdrawal of the rejection for at least these reasons. Furthermore, as stated in the Office Action, Applicant respectfully submits that independent Claim 61 and dependent Claims 62-68 are in condition for allowance as no further rejections remain with respect thereto. *See* Office Action, page 8, paragraph 10.

The Allowable Claims

Claims 8-10, 14-17, 52-54 and 58-60 have been indicated as including allowable subject matter. *See* Office Action, page 7. Applicant has rewritten Claims 8 and 52 in independent form. Applicant submits that independent Claims 8 and 52 are now in condition for allowance for at least these reasons. Furthermore, Applicant submits that withdrawn Claims 11-13 and 55-57 are also in condition for allowance by virtue of their dependence from an allowable generic claim. Accordingly, Claims 8-17 and 52-60 are in condition for allowance, which is respectfully requested in due course.

The Section 102 Rejections

A. Claims 1-5 and 46-49 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Ben Yaacov *et al.* (hereinafter "Yaacov"). *See* Office Action, page 3. Applicant has amended independent Claim 1 to include the recitations of dependent Claims 2 and 5 and, therefore, Applicant respectfully submits that many of the recitations of amended independent Claim 1 and the claims that depend therefrom are neither disclosed nor suggested by Yaacov. For example, amended independent Claim 1 recites:

A transistor comprising a source contact, a drain contact and a gate contact and a channel region between the source and drain contacts at least a portion of which comprises a hybrid layer comprising semiconductor material, wherein the transistor comprises a current aperture transistor and **wherein a portion of the channel region through the current aperture comprises a vertical portion and a horizontal portion**

Amended independent Claim 46 has been amended to include similar recitations. Applicant respectfully submits that at least the highlighted recitations of amended independent Claim 1 are neither disclosed nor suggested by the cited references for at least the reasons discussed herein.

The Office Action points to Figure 1(a) of Yaacov as providing the teachings of dependent Claim 5, which has been incorporated into amended independent Claim 1.

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Applicant respectfully disagrees. As illustrated in Figure 1(a) of Yaacov, the current region through the aperture clearly only provides a vertical portion. This is clearly illustrated in Figure 1(a) of Yaacov by the arrow depicting the path of the current extending vertically through the aperture.

In stark contrast, amended independent Claim 1 recites "a portion of the channel region through the current aperture comprises a **vertical portion and a horizontal portion.**" In particular, as discussed in the specification of the present application:

Without wishing to be bound by any theory of operation, electrons from the source contact 132 may flow along the 2DEG formed near the interface of the barrier layer 122 and the channel layer 120 and then vertically into the n-type portions 119 of the fourth layer 118 and then laterally across the n-type portion 117 of the third layer 116 to the n+ layer 114, vertically to the n+ layer 112 and to the drain contact 134 through the substrate 110. Thus, a current aperture may be provided by the p or i regions of the third layer 116 with a current path provided by the n-type regions incorporated in the laterally grown portions of the third layer 116 and the fourth layer 118. The hole 152 may also define the current aperture. Accordingly, a portion of the channel region of the device may be provided by a hybrid layer. Furthermore, the channel region through the current aperture may include a vertical portion through the fourth layer 118 and a horizontal portion through the third layer 116. The Schottky gate contact 130 (or MOS gate if an insulating layer provided on the barrier layer 122) may modulate the charge in the 2DEG to control the flow of current through the aperture.

See Specification, page 11, line 30 to page 12, line 10. Thus, if present, the arrow depicting the current path of the electrons according to some embodiments of the present invention would have both vertical and horizontal portions. Nothing in Yaacov discloses or suggests "a portion of the channel region through the current aperture having both a **vertical portion and a horizontal portion**" as recited in the amended independent Claim 1.

Accordingly, Applicant respectfully submits that amended independent Claims 1 and 46 are patentable over the cited references for at least the reasons discussed herein. Furthermore, the dependent claims are patentable at least per the patentability of the independent base claims from which they depend.

B. Claims 1, 2, 4, 6, 7, 46, 48, 50 and 51 stand rejected under 35 U.S.C. § 102 (e) as being anticipated by United States Patent Publication No. 2005/0006663 A1 to Howard *et al.* (hereinafter "Howard"). See Office Action, page 4. As discussed above, Applicant has amended independent Claim 1 to include the recitations of dependent Claims 2 and 5.

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Accordingly, since Claim 5 does not stand rejected over Howard, amended independent Claim 1 is patentable over Howard for at least these reasons. Claim 46 has been amended to include similar recitations to the highlighted recitations of Claim 1 above and, therefore, Applicant submits that amended independent Claim 46 is patentable over the Howard for at least similar reasons.

Accordingly, Applicant respectfully submits that amended independent Claims 1 and 46 are patentable over the cited references for at least the reasons discussed herein. Furthermore, the dependent claims are patentable at least per the patentability of the independent base claims from which they depend.

Many of the dependent claims are also separately patentable over Howard. In particular, the Office Action states that the terms "pendeo epitaxial" in Claim 6 and "laterally overgrown" in Claim 7 are considered "product by process" and, therefore, "determination of patentability is based on the product itself." See Office Action, pages 5-6. However, as is known to those of skill in the art, doped regions of silicon carbide may be formed through epitaxial growth and/or through implantation. For example, a p-type region of silicon carbide may be formed through epitaxial growth in the presence of a p-type dopant or through implantation of p-type dopants in an undoped, p-type or n-type epitaxial layer. The structure that results from epitaxial growth differs from that that results from implantation. Thus, the terms "epitaxial region" and "implanted region" structurally distinguish differing regions of silicon carbide and may be used as a recitation of structural characteristics of the regions of silicon carbide and/or as recitations of methods of forming such regions of silicon carbide. Thus, similarly, the terms "pendeo-epitaxial" and "laterally overgrown" structurally distinguish differing layers and may be used as a recitation of structural characteristic of the layers. Accordingly, as these layers are neither disclosed nor suggested by Howard, Applicant respectfully submits that dependent Claims 6 and 7 are separately patentable over Howard for at least these additional reasons.

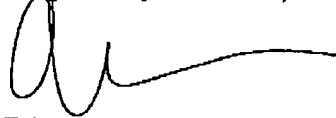
CONCLUSION

Applicant respectfully submits that pending claims are in condition for allowance, which is respectfully requested in due course. Favorable reconsideration of this application is respectfully requested. If, in the opinion of the Examiner, a telephonic conference would

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expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (919) 854-1400.

Respectfully submitted,



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CERTIFICATION OF FACSIMILE TRANSMISSION UNDER 37 CFR § 1.8

I hereby certify that this correspondence is being transmitted by facsimile to the U.S. Patent and Trademark Office on February 10, 2006 via facsimile number 571-273-8300.



Erin A. Campion